

Clean Version of the Entire Set of Pending Claim

- 1 1. A router comprising:
 - 2 a) a first port for receiving a packet having a first label, a header and a payload;
 - 3 b) a first table, from among one or more separate tables associated with
 - 4 different labels, associated with the first label; and
 - 5 c) a processor for processing the packet in accordance with the first table.
- 1 2. The router as recited by claim 1 wherein in the table is a route table.
- 1 3. The router as recited by claim 1 wherein the table is a forwarding table.
- 1 4. The router as recited by claim 1 wherein the label identifies a virtual private
2 network.
- 1 5. The router as recited by claim 1 further having a second port for
2 transmitting said packet.
- 1 6. The router as recited by claim 1 wherein the header is an internet protocol
2 header.
- 1 7. The router as recited by claim 1 wherein the label comprising information
2 identifying a virtual private network and a forwarding label.
- 1 8. A method of routing in a network comprising:
 - 2 a) maintaining a first table corresponding to a first virtual private network;

3 b) maintaining a second table corresponding to a second virtual private network;
4 and

5 c) routing a packet based on a pre-existing association with the first table or the
6 second table.

1 9. The method as recited by claim 8 wherein the first table and the
2 second table are route tables.

1 10. The method as recited by claim 8 wherein the first table and the
2 second table are forwarding tables.

1 11. The method as recited by claim 9 further comprising the step of
2 maintaining forwarding table indexable by a virtual private network
3 identifier.

1 12. The method as recited by claim 8 wherein the packet comprises a
2 label, a header and a payload.

1 13. The method as recited by claim 8 wherein the label comprises
2 information identifying a virtual private network.

1 14. The method as recited by claim 8 wherein the label comprises
2 information identifying a virtual private network and a forwarding label.

1 15. The method as recited by claim 9 wherein the first table or the second
2 route table is chosen for routing the packet based on the label.

- 1 16. A method of routing in a network comprising:
- 2 a) maintaining a first forwarding table corresponding to a first virtual private network;
- 3 b) maintaining a second forwarding table corresponding to a second virtual private
- 4 network; and
- 5 c) routing a packet based on a pre-existing association with the first forwarding table
- 6 or the second forwarding table.

- 1 17. The method as recited by claim 16 wherein the packet comprises a label, a
- 2 header and a payload.

- 1 18. The method as recited by claim 16 wherein the label comprises
- 2 information identifying a virtual private network.

- 1 19. The method as recited by claim 16 wherein the label comprises
- 2 information identifying a virtual private network and a forwarding label.

- 1 20. The method as recited by claim 16 wherein the first table or the
- 2 second table is chosen for routing the packet based on the label.

- 1 21. A network comprising:
- 2 a) a first edge router configured to receive a packet having a header and to transmit
- 3 into a wide area network cloud a modified packet having a label and the header;
- 4 b) a backbone router configured to receive the modified packet and route the
- 5 modified packet based on a route table associated solely with the label, from among
- 6 one or more separate route tables associated with different labels; and

7 c) a second edge router configured to receive the modified packet.

1 22. The network as recited by claim 21 wherein the label comprises
2 information identifying a virtual private network.

1 23. The network as recited by claim 21 wherein the label comprises
2 information identifying a virtual private network and a forwarding label.

1 24. The network as recited by claim 21 wherein the backbone router comprises a
2 second route table.

1 25. The network as recited by claim 21 wherein the modified packet further
2 includes,
3 a second label identifying a forwarding table corresponding to the virtual
4 private network, the forwarding table including a portion of the route table.

1 26. A method of routing a packet comprising:
2 a) identifying, by a label, a packet including the label, a header and a payload
3 destined for a virtual private network (VPN);
4 b) identifying, from the label, a routing table associated with the VPN from
5 among multiple separate routing tables associated with different labels; and
6 c) facilitating routing of the packet to the VPN.

1 27. The method of claim 26, wherein the label includes a virtual private network
2 identifier.

1 28. The method of claim 26, wherein the routing of the packet is based on
2 information in the header.

1 29. The method of claim 28 further comprising:
2 identifying, from a second label, a forwarding table corresponding to the VPN,
3 the forwarding table including a portion of the routing table.

1 30. The method of claim 29 further comprising:
2 identifying, from the forwarding table, label switching information for routing
3 the packet to the VPN.

1 31. The method of claim 30, wherein routing of the packet is based on
2 information in the forwarding table.

1 32. The method of claim 26 wherein the label includes a forwarding label
2 corresponding to a forwarding table.